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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,301	02/23/2004	Akira Kuibira	039.0034	2300

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EXAMINER

PAIK, SANG YEOP

ART UNIT PAPER NUMBER

3742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/708,301

Applicant(s)

KUIBIRA ET AL.

Examiner

Sang Y. Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 8-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/7/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 8-10 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuibira et al (US 2002/0007911) in view of Kadomura et al (US 5,981,913), and Kanno et al (US 2003/0168439) or Takuma et al (JP 09-249465).

Kuibira shows the structure claimed including a ceramic susceptor made of aluminum oxide or aluminum nitride having the thermal conductivity of 100 w/mk or more with a resistive heating element present more toward the side opposite to the retaining side of the susceptor which has a flatness less than 500 um or less with a diameter 200 mm or more, the heating element having a width .5 mm and a line interval of .5 mm, and a heat-reflecting support plate (2) attached to the susceptor. However, Kuibira does not explicitly show the support plate (2) made of a metal plate having a thermal conductivity and having the susceptor attached to the metal plate with an adhesive bonding layer, screws or recess.

Kadomura shows it is known in the art to provide a metal plate (2) as a support plate for a ceramic susceptor wherein the metal plate is made of the claimed aluminum silica carbide composite material. Kadomura shows that the metal plate would display the over 100 W/mk or more thermal conductivity with a thickness that is greater than the susceptor. In view of Kadomura, it would have been obvious to one of ordinary skill in the art to adapt Kuibira with

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the metal plate having the claimed materials to provide alternatively suitable heat transfer means either to heat or cool the thermal energy from the susceptor.

Kanno shows that it is known in the art that a bolt is used to fix a ceramic susceptor or heater to a cooling jacket, and Takuma also shows that it is known to provide an adhesive bonding layer between an aluminum nitride member to a metal member. In view of Kanno or Takuma, it would have been obvious to one of ordinary skill in the art to provide various means such as an adhesive bonding layer, screws or any other suitable means to join the susceptor and the metal plate so that a close and tight contact can be made to enhance a thermal transfer between the members.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuibira in view of Kadomura, and Kanno or Takuma as applied to claims 1-4, 6, 8-10 and 12-16 above, and further in view of Hiramatsu et al (US 6,507,006).

Kuibira in view of Kadomura, and Kanno or Takuma, shows the structure claimed except the ceramic susceptor having the porosity .03% or less.

Hiramatsu shows that the ceramic susceptor can be made of silicon carbide, aluminum nitride as well as alumina and boron nitride, and it further shows that the semiconductor wafer chuck with a ceramic substrate with the porosity less than 5%, and, preferably from 0.01 to 3%. It would have been obvious to further adapt Kuibira, as modified by Kadomura, and Kanno or Takuma, with the ceramic susceptor having the claimed porosity for a high thermal conductivity and prevent breakdown of the voltage drop in the ceramic substrate to improve the chucking of a wafer to the heating surface.

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Response to Arguments

4. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sang Y Paik
Primary Examiner
Art Unit 3742

syp